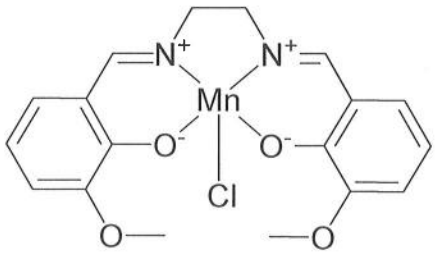
DC-001307

DALTON Pharma Services
Accelerated Drug Discovery And Development

Certificate of Analysis

Name of Product: Manganese (salen-3,3'-dimethoxy)chloride *(Chloro(bis(3,3'-di-methoxysalicylidene)ethylenediamine)manganese; EUK-134;)*		**Lot Number:** VB-48-17-062222
Manufacture Date: 06/22/22	**Retested On:** n/a	**Next Retest Date:** 06/21/25
Recommended Storage Conditions: ☐ Ambient atmosphere ☒ Inert atmosphere ☐ Ambient temperature ☒ 0-10°C (refrigeration) ☐ -20°C or below (freezer)		

Structure:  $1.2H_2O$	**Molecular Formula:** $C_{18}H_{18}ClMnN_2O_4 \cdot 1.2H_2O$*
	Molecular Weight: 438.36**
	CAS Number: 81065-76-1

TEST	SPECIFICATION	RESULT
Appearance	Brown solid	Brown solid
Purity by HPLC	NLT 99.5% by AUC @ 240 nm	99.6% by AUC @ 240 nm
Mass Spectrum	$[M\text{-}Cl]^+ = 381.2 \pm 0.1$ (ESI+ve)	$[M\text{-}Cl]^+ = 381.2$

349 Wildcat Rd., Toronto, ON M3J 2S3 • Tel: 416-661-2102 • 1-800-567-5060 • Fax: 416-661-2108
www.dalton.com

DALTON
Pharma Services
Accelerated Drug Discovery And Development

TEST	SPECIFICATION	RESULT
Water Content (Karl Fischer)	Report	4.4% (coulometric)
Elemental Analysis	Report - Calculated*: C: 48.92 % H: 4.74 % N: 6.34%	Found: C: 49.30% H: 4.82% N: 6.49%
Elemental Impurities	Report	Arsenic: 0.10 ppm; Cadmium: < 0.10 ppm; Mercury: < 0.10 ppm; Lead: < 0.10 ppm
UV Absorbance	0.7-0.8 at 227 nm	0.80273 at 227 nm

Notes:

* Calculated for $C_{18}H_{18}ClMnN_2O_4 \cdot 1.2H_2O$ based on Elemental Analysis results

** Anhydrous molecular weight = 416.74.

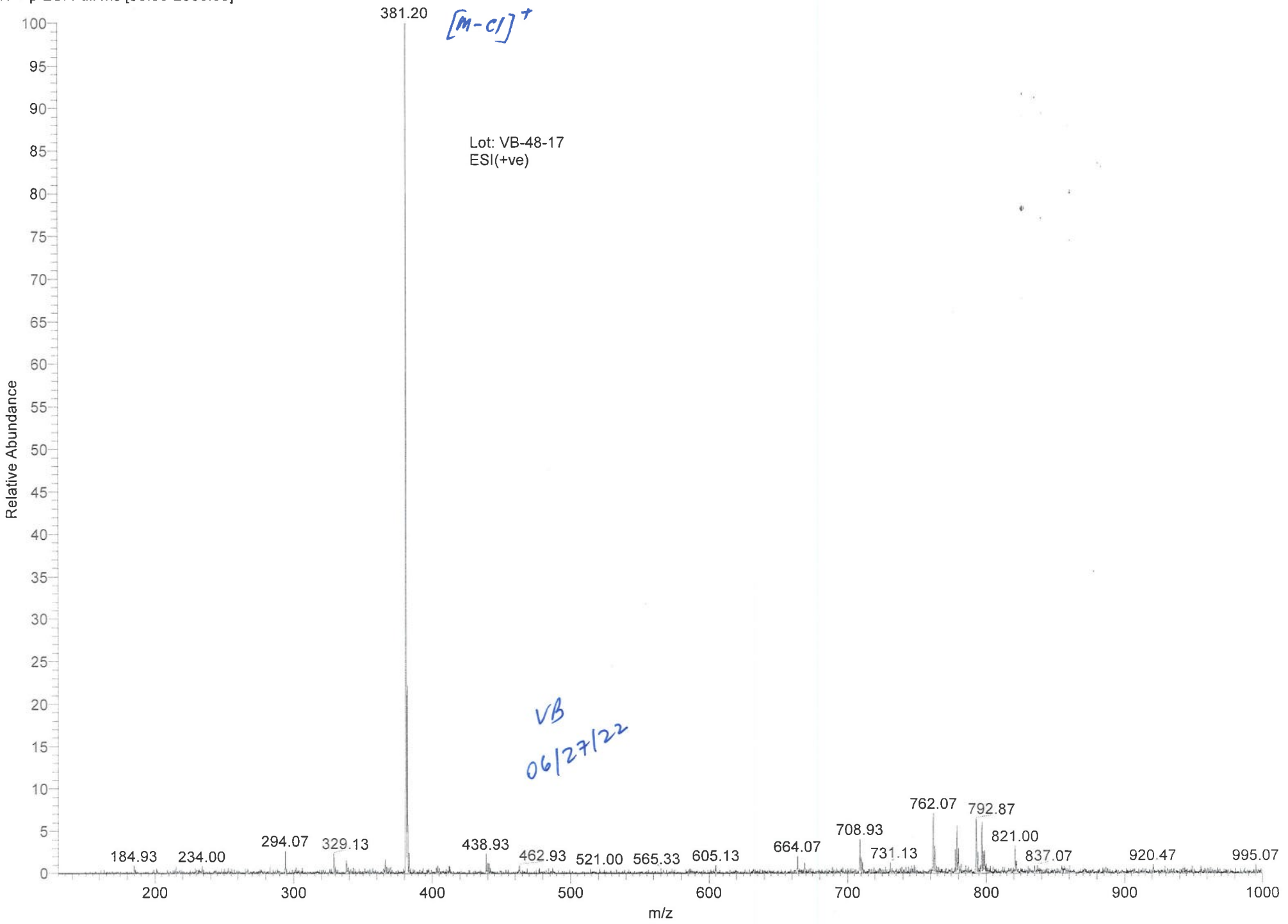
Dalton Pharma Services certifies that the above information is authentic and accurate.

R. V. K Vinod Ramanatham, Ph.D., R & D Services Manager	Date: 07/05/22

Research Use Only
Not for food and Drug Use
349 Wildcat Rd., Toronto, ON M3J 2S3 • Tel: 416-661-2102 • 1-800-567-5060 • Fax: 416-661-2108
www.dalton.com

E:\DaltonXcal\Data\062722\VB-48-17 6/27/2022 5:36:13 AM

VB-48-17 #162-167 RT: 5.52-5.69 AV: 6 NL: 8.63E5
T: + p ESI Full ms [50.00-2000.00]



Robertson Microlit
LABORATORIES

1705 US Highway 46, Suite 1D
Ledgewood, NJ 07852
(973) 966-6668
results@robertson-microlit.com
www.robertson-microlit.com

DCL001

Zemin Li

Dalton Pharma Services

349 Wildcat Road

Toronto Ontario, Canada M3J 2S3

Sample #: VB-48-17 Test #: 1 Received: 06/23/2022 Completed: 06/27/2022

USP <233> Elemental Impurities Arsenic : 0.10 ppm Cadmium : <0.10 ppm Mercury : <0.10 ppm
Lead : <0.10 ppm

Services
Rush Service +50% ($50 min)

Sample #: VB-48-17-5 Test #: 1 Received: 06/23/2022 Completed: 06/27/2022

USP <233> Elemental Impurities Arsenic : 0.13 ppm Cadmium : <0.10 ppm Mercury : <0.10 ppm
Lead : <0.10 ppm

Services
Rush Service +50% ($50 min)

zl 07/05/22
Not request in this CofA

zl

Robertson Microlit
LABORATORIES

1705 US Highway 46, Suite 1D
Ledgewood, NJ 07852
(973) 966-6668
results@robertson-microlit.com
www.robertson-microlit.com

DCL001

Zemin Li

Dalton Pharma Services

349 Wildcat Road

Toronto Ontario, Canada M3J 2S3

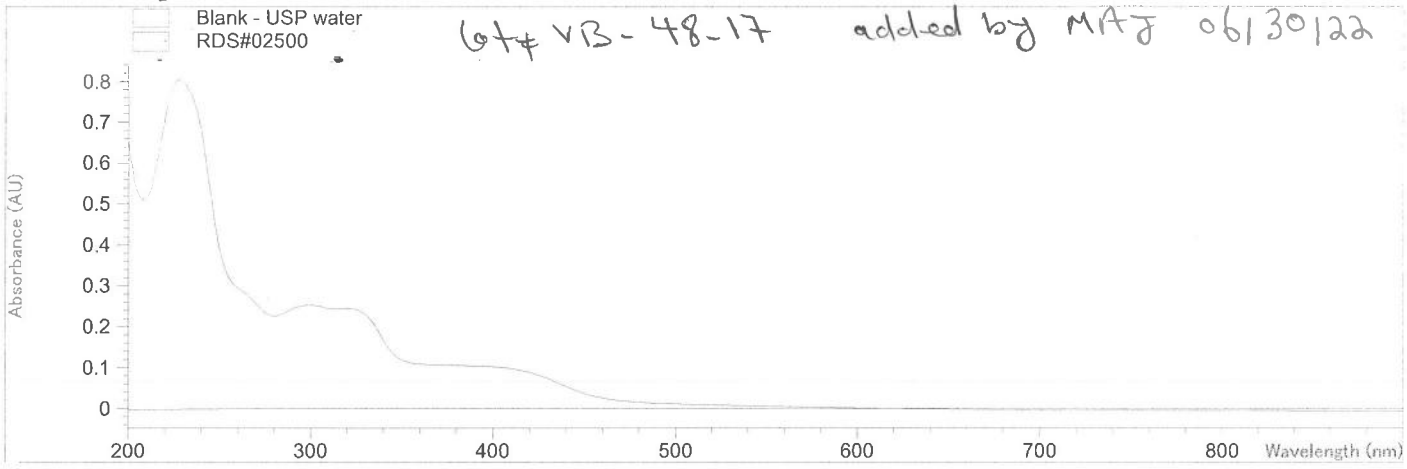
Sample #: VB-48-17		Test #: 2	Received:	06/27/2022	Completed:	06/28/2022
C : 49.30 %	H : 4.82 %	N : 6.49 %				
Sample #: VB-48-17-5		Test #: 2	Received:	06/27/2022	Completed:	06/28/2022
C : 47.97 %	H : 4.74 %	N : 6.52 %				

07/05/22 Not request in this CofA

◆ Where speed and accuracy are elemental ◆

Method file : <method not saved>
Information : Default Method
Data File : C:\Chem32\1\DATA\MAJ062822-3B.SR

Overlaid Spectra:



#	Name	Abs<226nm>	Abs<227nm>	Abs<228nm>
1	Blank - USP wate	-2.2373E-3	-2.2101E-3	-2.1610E-3
2	RDS#02500	0.79874	0.80273	0.80382

Instrument S/N : CN22805011

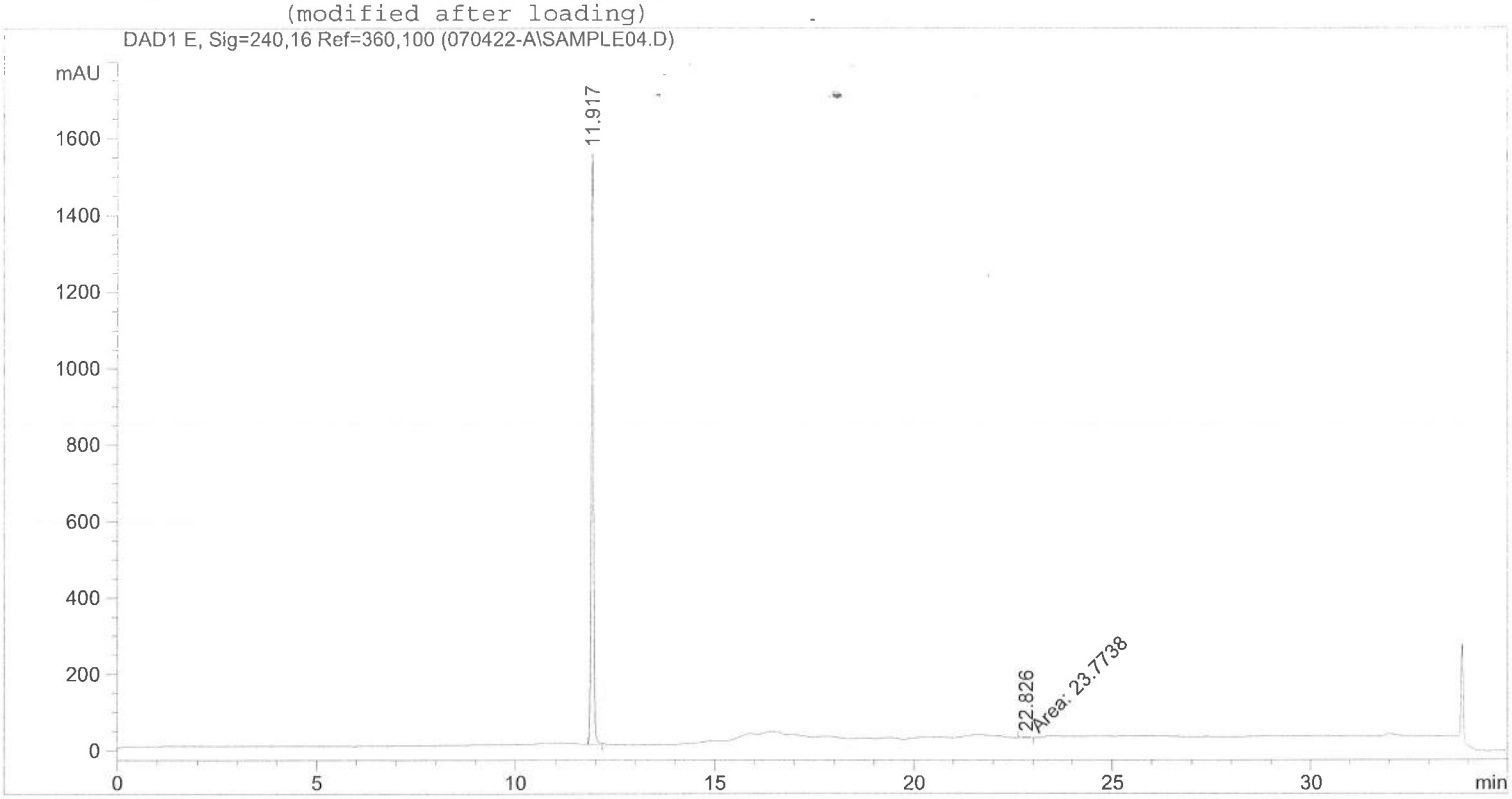
Removed Spectra

No spectra deleted

Audit Trail

Time	User	Description
28/06/2022 11:22:32 AM	mjafari	Changed Find and annotate peaks from "3" to "2".
28/06/2022 11:22:32 AM	mjafari	Changed Find and annotate valleys from "3" to "2" .
28/06/2022 11:22:32 AM	mjafari	Changed Display Spectrum from "0nm-0nm" to "225nm -230nm".
28/06/2022 11:22:32 AM	mjafari	Method MODIFIED by mjafari
28/06/2022 11:22:32 AM	mjafari	Method MODIFIED by mjafari
28/06/2022 11:22:32 AM	mjafari	--> General Method Information
28/06/2022 11:23:08 AM	mjafari	Measure Blank done.
28/06/2022 11:24:05 AM	mjafari	Measure Sample done.
28/06/2022 11:27:21 AM	mjafari	Measure Sample done.
28/06/2022 11:30:09 AM	mjafari	Result saved by mjafari
28/06/2022 11:30:19 AM	mjafari	Result changed. Filename: C:\Chem32\1\DATA\MAJ062822.SR; Workstation Name: UV-VIS-7; Instrument Serial: HEWLETT-PACKARD,G1103A,CN22805011,A.03.90

```
==========================================================================
Injection Date  : 7/4/2022 4:46:23 PM          Seq. Line :   4
Sample Name     : VB-48-17                      Location : Vial 82
Acq. Operator   : SKG                              Inj :   1
Acq. Instrument : HPLC#12                     Inj Volume : 10 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 5 µl
Acq. Method     : C:\HPCHEM\1\METHODS\OTS1MEOH.M
Last changed    : 6/30/2022 1:23:15 PM by SKG
Analysis Method : C:\HPCHEM\1\METHODS\OTS1.M
Last changed    : 7/5/2022 3:51:04 PM by SKG
                  (modified after loading)
```

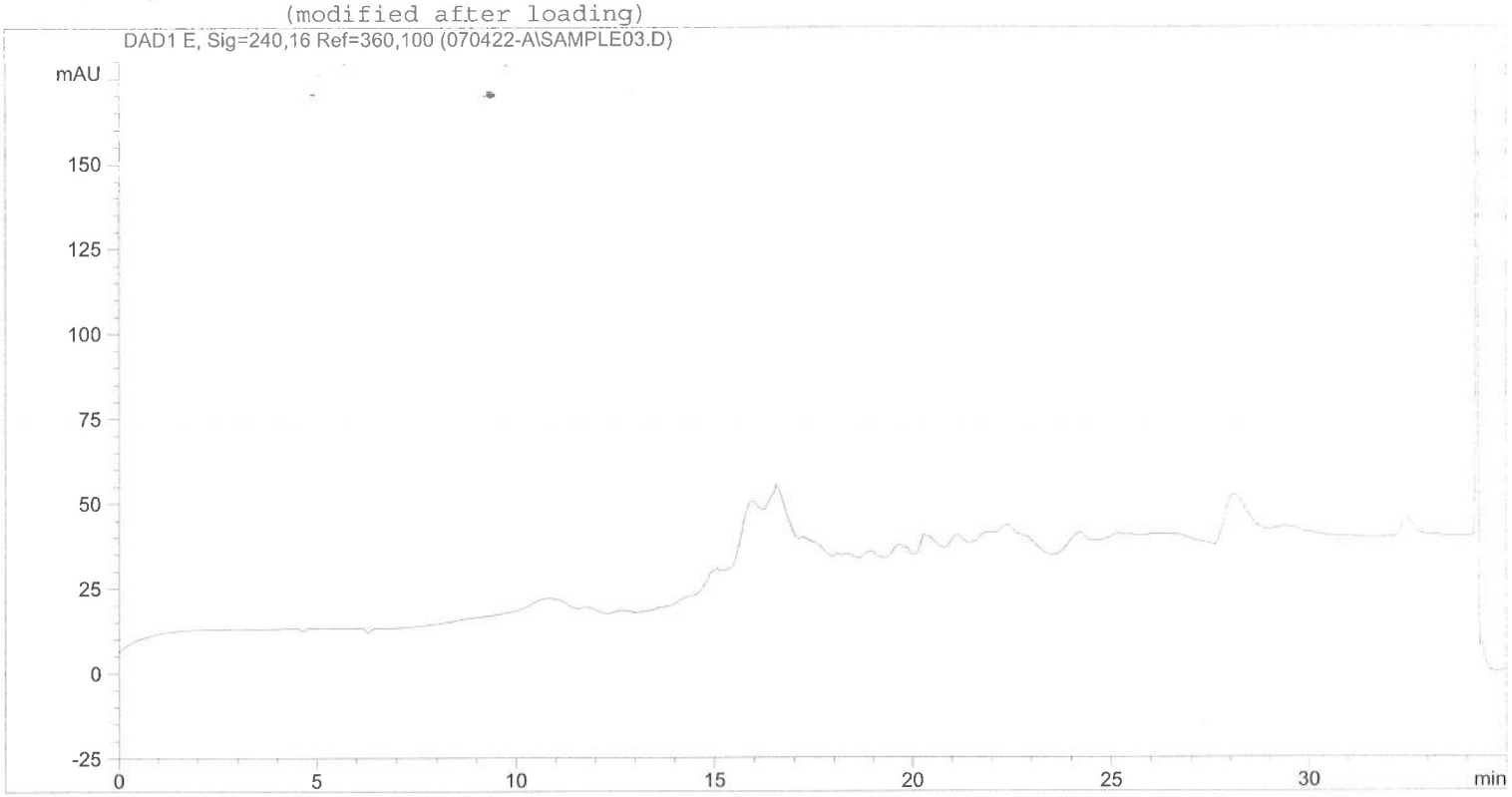



```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs
```

SRH
07/05/22

```
Signal 1: DAD1 E, Sig=240,16 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  11.917 BB    0.0611 6239.40283 1544.68787  99.6204
   2  22.826 MM    0.2580   23.77378    1.53592   0.3796

Totals :                  6263.17661 1546.22379

 Results obtained with enhanced integrator!
==========================================================================
                        *** End of Report ***
```

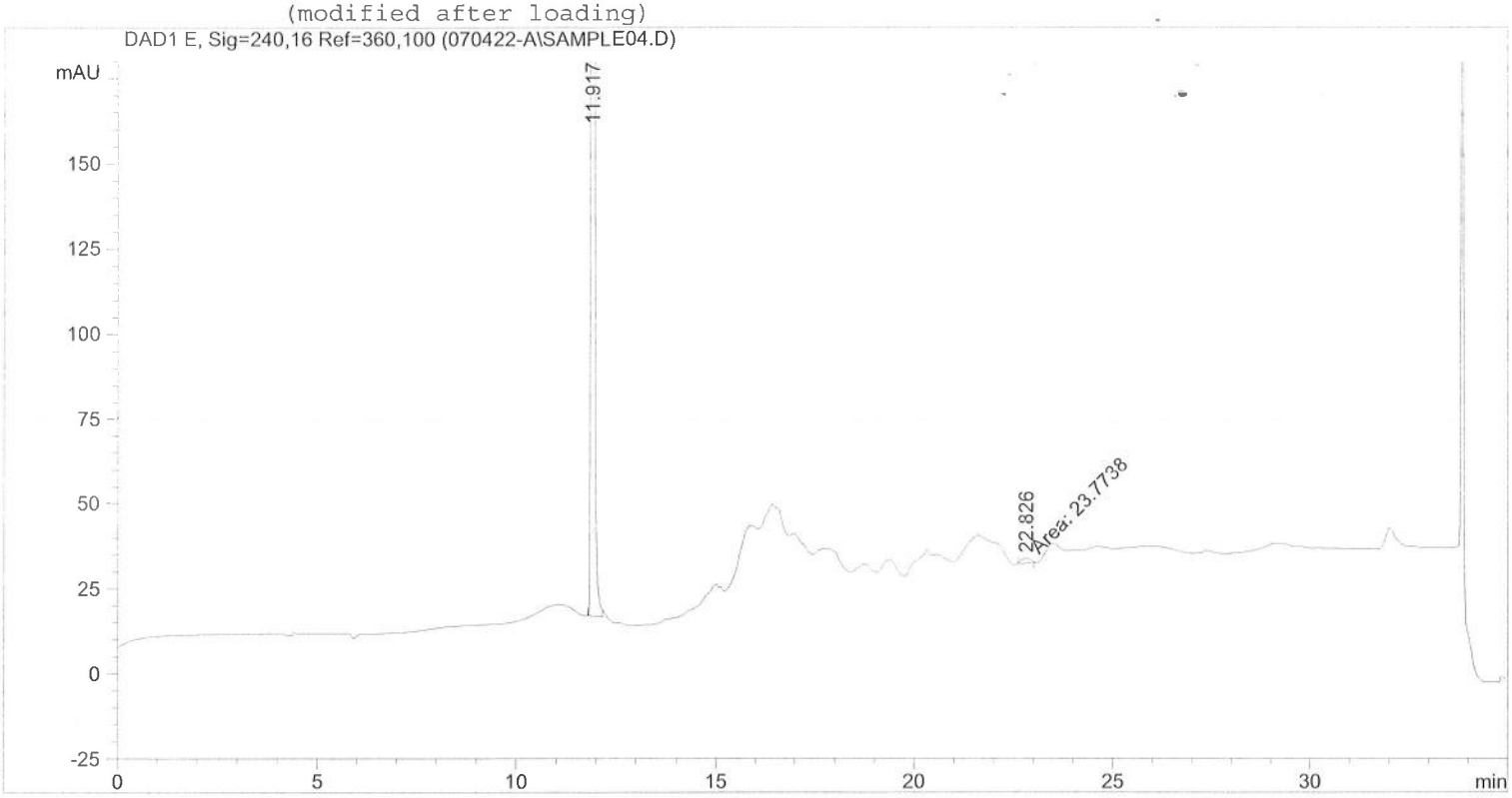
```
==========================================================================
Injection Date  : 7/4/2022 4:10:10 PM          Seq. Line :   3
Sample Name     : Blank                        Location : Vial 81
Acq. Operator   : SKG                             Inj :   1
Acq. Instrument : HPLC#12                   Inj Volume : 10 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 5 µl
Acq. Method     : C:\HPCHEM\1\METHODS\OTS1MEOH.M
Last changed    : 6/30/2022 1:23:15 PM by SKG
Analysis Method : C:\HPCHEM\1\METHODS\OTS1.M
Last changed    : 7/5/2022 3:46:36 PM by SKG
                  (modified after loading)
```




```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs

No peaks found

==========================================================================
                        *** End of Report ***
```

SKG
07105122

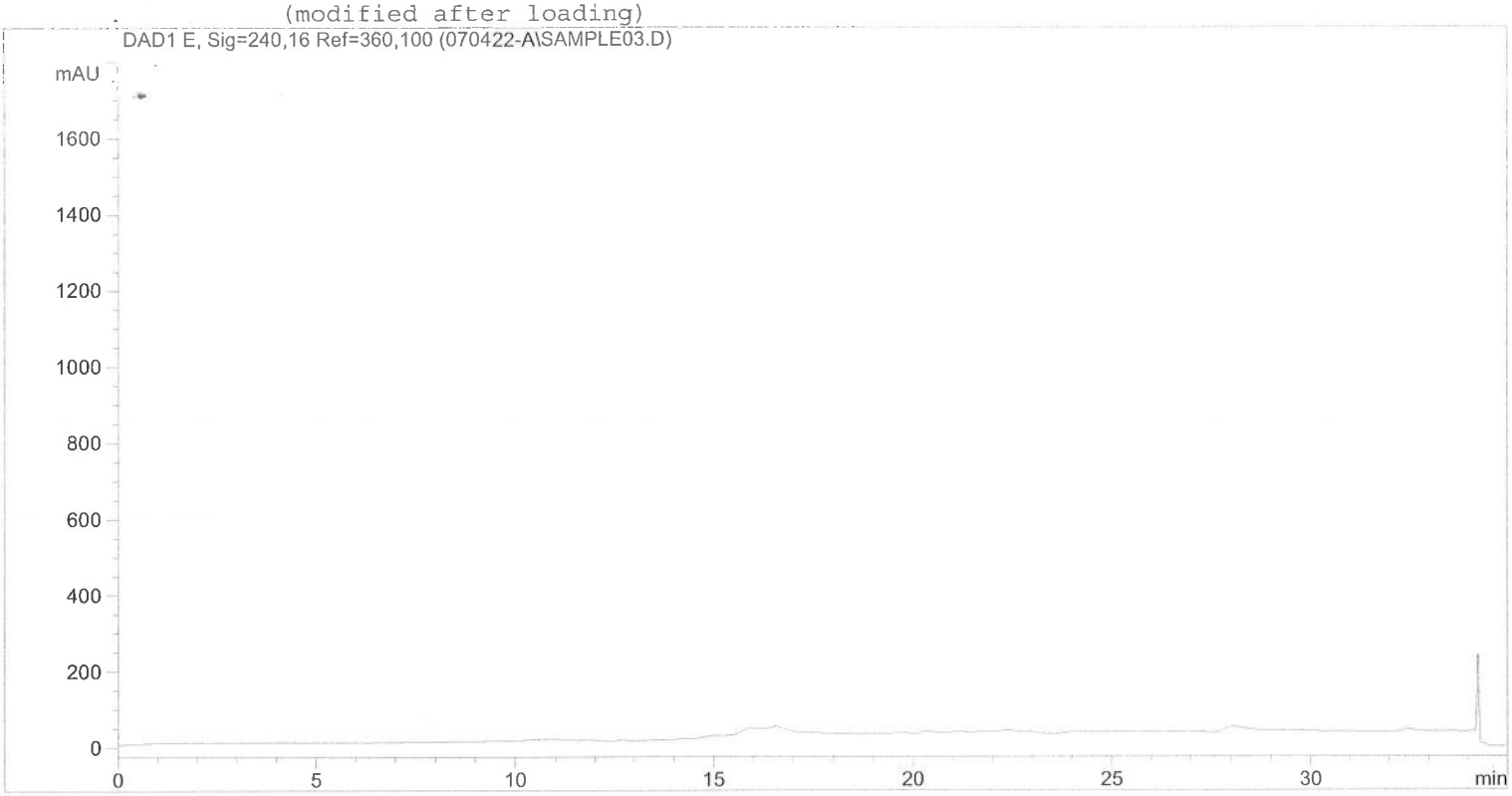
```
==========================================================================
Injection Date  : 7/4/2022 4:46:23 PM          Seq. Line :   4
Sample Name     : VB-48-17                      Location : Vial 82
Acq. Operator   : SKG                              Inj :   1
Acq. Instrument : HPLC#12                     Inj Volume : 10 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 5 µl
Acq. Method     : C:\HPCHEM\1\METHODS\OTS1MEOH.M
Last changed    : 6/30/2022 1:23:15 PM by SKG
Analysis Method : C:\HPCHEM\1\METHODS\OTS1.M
Last changed    : 7/5/2022 3:46:57 PM by SKG
                  (modified after loading)
```




```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 E, Sig=240,16 Ref=360,100

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  11.917 BB    0.0611 6239.40283 1544.68787  99.6204
   2  22.826 MM    0.2580   23.77378    1.53592   0.3796

Totals :                  6263.17661 1546.22379

 Results obtained with enhanced integrator!
==========================================================================
                        *** End of Report ***
```

SRA
07/05/22

```
==========================================================================
Injection Date  : 7/4/2022 4:10:10 PM          Seq. Line :   3
Sample Name     : Blank                         Location : Vial 81
Acq. Operator   : SKG                              Inj :   1
Acq. Instrument : HPLC#12                     Inj Volume : 10 µl
Different Inj Volume from Sequence !     Actual Inj Volume : 5 µl
Acq. Method     : C:\HPCHEM\1\METHODS\OTS1MEOH.M
Last changed    : 6/30/2022 1:23:15 PM by SKG
Analysis Method : C:\HPCHEM\1\METHODS\OTS1.M
Last changed    : 7/5/2022 3:46:07 PM by SKG
                  (modified after loading)
```




```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs

No peaks found

==========================================================================
                        *** End of Report ***
```

SKG

07/05/22